

3. References for MWI:

- GR-283 LSSGR: Simplified Message Desk Interface (SMDI) (A Module of LSSGR, FR-64), Issue 2, December 2000 (replaces TR-NWT-000283 Issue 2 & Supplement 1).

This service, if offered as a BSE, may be associated with the Dedicated Network Access Link or Circuit Switched Line basic serving arrangement, as stated in each individual ONA plan.

Message Waiting Indicator Activation (Audible) - Expanded (1100)

When an end user subscribes to Voice Message/Reminder service the end user should have the ability to forward calls to the Enhanced Service Provider's voice messaging service, leave a detailed message for those who may be calling, and have a recorded voice message left in response. When messages are left for the end user, a message waiting indicator should be provided indicating a message is waiting. The ability to remotely activate message waiting indicator to end user's lines not located in the same central office, but in the same Local Access Transport Area (LATA) as the ESP (Voice Message Provider), is made possible through the Common Channel Signaling System 7 (SS7) network.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|--|--|------------|
| Message Waiting Indicator Activation (Audible) - Expanded | AM - Remote Activation of Message Waiting - Expanded | BSE |
| | BA - Premier Messaging Services Interface | BSE |
| | Qwest - Message Delivery Service Interoffice | BSE |

FEATURE OPERATION:

The subscriber to the ESP's service has calls forwarded to the ESP's 7 or 10 digit telephone number. The end user can use Call Forwarding Busy Line, Call Forwarding Don't Answer, Call Forwarding Variable, or direct call to reach the ESP's voice message service. The ESP can activate a message waiting indicator for end users not served by the same central office switch as the ESP as long as the called subscriber (end user) and the ESP's central office are connected via the SS7 network and are equipped with the appropriate software packages.

Messages from the Voice Message Provider:

Two message types may be sent by the voice message provider to the serving central office via a Dedicated Network Access Link (See: Message Desk (SMDI) - Expanded). The first message activates the Message Waiting Indicator (MWI) feature on a specified directory number, the second message deactivates the indicator. The ESP's serving central office does not acknowledge receipt of these messages unless it encounters a problem when attempting to execute the request.

There are two types of failure messages, invalid and blocked. The invalid message results from an attempt to activate or deactivate MWI on a directory number not assigned the MWI option. The failure message can also be generated when a directory number is transmitted with incomplete or inaccurate information. The blocked message indicates that the central office was momentarily unable to execute the message request.

The ESP's serving central office does not expect an acknowledgment signal indicating the activation/deactivation of MWI for the ESP.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|-----------|------|---------|
| Earliest Generic Release | 1AET1.03* | 5E7* | BCS30* |

* ESP and end user's serving central offices must be interconnected with SS7.

2. The ESP's customer premises equipment (CPE) used to receive and interpret the SMDI data must use the same signaling and data communications protocol as the telephone office Input/Output channel. This channel uses a standard Electronic Industries Association (EIA) RS232 asynchronous 1200 or 9600 baud ASCII interface.
3. Interconnection to the CPE is via standard outside plant cable, tip and ring connections.
4. Interface Description - Interface Between Customer Premises Equipment, Simplified Message Desk and Switching System: 1A ESS, Issue 1, July 1985.
5. References:
 - Ameritech Message Signal Interface (AMSI) and Ameritech Message Signal Interface - Expansion AM-TR-OAT-000065, Issue 1, July 1990.
 - Technical Reference for Call Forwarding Busy Line and Call Forwarding Don't Answer can be found in GR-586 LSSGR: Call Forwarding Subfeatures, FSD 01-02-1450, Issue 1, June 2000 (replaces TR-TSY-000586 Issue 1 – no technical changes).

This service, if offered as a BSE, is associated with the Dedicated Network Access Link serving arrangement.

Message Waiting Indicator - Activation (Visual) (1076)

This capability allows an ESP to indicate to its client that a message is waiting for retrieval. With this capability, the ESP can activate a visual alerting signal (usually a lamp) on the ESP's client's line.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|---|--|------------|
| Message Waiting Indicator - Activation (Visual) | AM - Remote Activation of Message Waiting | BSE |
| | BA - Messaging Services Interface | BSE |
| | BS - SMDI | BSE |
| | PB - Electronic Business Set Message Waiting | BSE |
| | Qwest - Message Delivery Service | BSE |

FEATURE OPERATION:

MWI - Activation (Visual) is a central office software and hardware capability that allows an ESP with CPE, to activate a visual lamp or LCD on their subscriber's line when messages are being held (see MWI - Ability to Receive Visual Message Waiting). The subscriber's line, also with special CPE and central office software/hardware, would flash at 60 IPM when activated. After a subscriber picked up their messages, the ESP would have the ability to deactivate the client's visual message waiting indicator.

Message Waiting Indication, visual or otherwise, is controlled by a software package in the central office switch, usually Simplified Message Desk Interface (SMDI) or Message Desk Service. The software package will activate or deactivate a client's message waiting indication based on signals passed over an interface from the Message Desk Provider to the central office interface.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|--------|--------|---------|
| Earliest Generic Release | 1AE8 | 5E4.2* | BCS29 |
| | | *ISDN | |

2. The lamp is off when the ESP's client is off-hook or there are no messages queued and the client is on-hook.
3. This feature can only be offered on an intraoffice basis.
4. References: Qwest reference publication 77335 - "Qwest Message Waiting Indication - Visual," September 1990.

This service, if offered as a BSE, is associated with the Dedicated Network Access Link basic serving arrangement.

Message Waiting Indicator Activation (Visual) - Expanded (1101)

When an end user subscribes to Voice Message/Reminder service the end user should have the ability to forward calls to the Enhanced Service Provider's voice messaging service, leave a detailed message for those who may be calling, and have a recorded voice message left in response. When messages are left for the end user, a message waiting indicator should be provided indicating a message is waiting. The ability to remotely activate message waiting indicator to end user's lines not located in the same central office, but in the same Local Access Transport Area (LATA) as the ESP (Voice Message Provider), is made possible through the Common Channel Signaling System 7 (SS7) network.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|--|--|------------|
| Message Waiting Indicator Activation (Visual) - Expanded | AM - Remote Activation of Message Waiting - Expanded | BSE |
| | BA - Premier Messaging Services Interface | BSE |
| | Qwest - Message Delivery Service - Interoffice | BSE |

FEATURE OPERATION:

The subscriber to the ESP's service has calls forwarded to the ESP's 7 or 10 digit telephone number. The end user can use Call Forwarding Busy Line, Call Forwarding Don't Answer, Call Forwarding Variable, or direct call to reach the ESP's voice message service. The ESP can activate a message waiting indicator for end users not served by the same central office switch as the ESP as long as the called subscriber (end user) and the ESP's central office are connected via the SS7 network and are equipped with the appropriate software packages.

Messages from the Voice Message Provider:

Two message types may be sent by the voice message provider to the serving central office via a Dedicated Network Access Link (See: Message Desk (SMDI) - Expanded). The first message activates the Message Waiting Indicator (MWI) feature on a specified directory number, the second message deactivates the indicator. The ESP's serving central office does not acknowledge receipt of these messages unless it encounters a problem when attempting to execute the request.

There are two types of failure messages, invalid and blocked. The invalid message results from an attempt to activate or deactivate MWI on a directory number not assigned the MWI option. The failure message can also be generated when a directory number is transmitted with incomplete or inaccurate information. The blocked message indicates that the central office was momentarily unable to execute the message request.

The ESP's serving central office does not expect an acknowledgment signal indicating the activation/deactivation of MWI for the ESP.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

| Switch Type | 1A ESS | 5ESS | DMS-100 |
|--------------------------|-----------|------|---------|
| Earliest Generic Release | 1AE11.03* | 5E7* | BCS30* |

* ESP and end user's serving central offices must be interconnected with SS7.

2. The ESP's customer premises equipment (CPE) used to receive and interpret the SMDI data must use the same signaling and data communications protocol as the telephone office Input/Output channel. This channel uses a standard Electronic Industries Association (EIA) RS232 asynchronous 1200 or 9600 baud ASCII interface.
3. Interconnection to the CPE is via standard outside plant cable, tip and ring connections.
4. Interface Description - Interface Between Customer Premises Equipment, Simplified Message Desk and Switching System: 1A ESS, Issue 1, July 1985.
5. References:
 - Ameritech Message Signal Interface (AMSI) and Ameritech Message Signal Interface - Expansion AM-TR-OAT-000065, Issue 1, July 1990.
 - Technical Reference for Call Forwarding Busy Line and Call Forwarding Don't Answer can be found in GR-586 LSSGR: Call Forwarding Subfeatures, FSD 01-02-1450, Issue 1, June 2000 (replaces TR-TSY-000586 Issue 1 – no technical changes).

This service, if offered as a BSE, is associated with the Dedicated Network Access Link BSA.

Network Reconfiguration (1038)

This feature provides ESPs flexibility in managing and reconfiguring their dedicated facilities. This arrangement involves providing to a customer access to a control port on a digital cross-connect system (DCS). This service enables the re-connection (grooming) of one to 24 DS0 channels within a group of DS1s such that the destination of each DS0 can be changed. Reconfiguration at higher or lower transmission speeds may also be provided. A subscriber could control their dedicated channels in any combination between locations designated on their private network.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|--|------------|
| Network Reconfiguration | AM - Ameritech Network Reconfiguration Service | BSE |
| | BA - INTELLIMUX SM | BSE |
| | BS - FlexServ [®] | BSE or CNS |
| | NX - Network Reconfiguration Service | BSE |
| | PB - Customer Network Reconfiguration | BSE |
| | SWB - Network Reconfiguration | BSE |
| | Qwest - COMAND A LINK SM | BSE |

FEATURE OPERATION:

Network Reconfiguration under ESP control is initialized by setting up a database for ESP access consisting of circuit identifications, customer locations, security passwords, etc. This database is then accessed by the ESP to make their own DS1 or DS0 routing rearrangements within a Digital Cross-connect System (DCS).

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available only in conjunction with Digital Cross-connect System (DCS) frames located in the telephone company Hub and/or Digital Serving Node locations. ESP/ESP's client facilities will have to route to the above-mentioned DCS frames.
2. Check with your local telephone company in order to determine availability of Extended Superframe Format (ESF) with Network Reconfiguration.
3. All bridging and subrating of services is to be provided outside of the DCS devices. The DCS devices are only used for cross-connecting DS0s.
4. References:
 - TR-NWT-000170 Digital Cross-Connect System (DSC 1/0) Generic Criteria, Issue 2, January 1993.
 - TR-NWT-000233 Wideband and Broadband Digital Cross-Connect Systems Generic Criteria, Issue 3, November 1993, (replaces TA-NWT-000233, Issue 4), component of FR-440.

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- Ameritech reference AM-TR-TMO-000064, Issue 2, August 1991, Ameritech Reconfiguration Interface Specifications.
- Qwest publication 77371 COMAND A LINKSM Technical Descriptions and Interface Combinations, Issue B, November 1994.

This service, if offered as a BSE, is associated with the Dedicated Network Access Link or Dedicated High Capacity digital (1.544 Mbps) basic serving arrangements, as indicated in each individual ONA plan.

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APPENDIX 1

January 31, 2002

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1. Appendix 1 - Region Specific Services - Technical Descriptions for Basic Serving Arrangements

Dedicated Digital (64 Kbps **)

** NOTE - this capability was moved to the main section of the ONA Services User Guide for the July 1993 update.

Asynchronous Transfer Mode (ATM) Service (4031)

Asynchronous Transfer Mode (ATM) Service is a connection-oriented data transport service based on ATM cell-based switching technology.

ATM Service provides flexible connectivity using virtual connections implemented over digital facilities operating at transmission speeds of 1.536 Mbps, 44.210 Mbps, 149.760 Mbps or 599.040 Mbps. This service provides for the switching of symmetrical duplex transmissions of fixed-length ATM cells, utilizing virtual connections. As ATM is a connection-oriented service, to transfer information a virtual connection must be set up across the ATM network. ATM Service supports permanent virtual connections.

Information transmitted by ATM Service is segmented into fixed length cells, transported to and re-assembled at the destination. The ATM cell has a fixed length of 53 bytes. An ATM cell is broken into two main sections, the header and the payload. The payload is the portion that carries the actual information. The header is used for network functions such as addressing and error correction.

| Generic Name of ONA Service | Product Name | |
|--|---------------------------------|-----|
| Asynchronous Transfer Mode (ATM) Service | BS – Asynchronous Transfer Mode | BSA |

References:

- ATM Forum documents, "ATM User-Network Interface Specification" (Versions 3.0 and 3.1)
- BellSouth Technical Reference 73585, "Asynchronous Transfer Mode (ATM) Network Interface and Performance Specifications."

ATM Cell Relay Service (8040)

ATM Cell Relay Service (ATM CRS) is a connection-oriented communications service that uses Asynchronous Transfer Mode (ATM) technology. The service provides customers with high-speed, low-delay information transfer capacity, which supports applications that require near-real-time mixed media (data, video, image, voice) communications among multiple locations. ATM CRS supports transmission speeds of either up to 45 Mbps or up to 155 Mbps.

ATM CRS requires the use of customer terminal equipment that functions as a multiplexer/router/hub or ATM switch. This terminal equipment must be purchased separately from the ATM CRS and must conform to industry standards. The terminal equipment accumulates customer traffic and puts it into a cell relay format suitable for transmission over the ATM CRS Network.

ATM CRS conforms to industry standards and is only provided over fiber optic facilities. Technical Specifications for ATM CRS are delineated in Technical Publication PUB 77378 (Qwest).

| Generic Name of ONA Service | Product Name | |
|-----------------------------|--------------------------------|-----|
| ATM Cell Relay Service | Qwest - ATM Cell Relay Service | BSA |

Dataphone Select-A-Station (8050)

Dataphone Select-A-Station ("DSAS") is a multi-station, voice grade, private line data service designed to establish point-to-point connections between an alarm monitoring service provider's monitoring center and a number of remote locations. This service permits the monitoring service provider's monitoring center to poll the remote locations of its end-user customers. DSAS is available on an interstate basis.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|------------------------------------|------------|
| Dataphone Select-A-Station | Qwest – Dataphone Select-A-Station | BSA |

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This service is only available is selected existing locations that are capable of providing the service, because manufacturing of the equipment used to provision the service was discontinued by the equipment manufacturer in 1986

Digital Data Service 2-Wire (8042)

Digital Data Service 2-Wire (DDS 2-Wire) provides a two-wire, full duplex circuit, capable of transmitting digital data at 144 kbps. DDS 2-Wire consists of a 160 kbps channel for the transmission of 144 kbps serial or bi-directional data and a 16 kbps embedded, bi-directional, operations channel to support provisioning and maintenance operations; i.e., loopback testing and standard network management messages. When the customer's equipment provides access to the 16 kbps embedded channel, that bandwidth will be available for the customer to perform loopback testing and network management. This service is offered on a point-to-point basis only.

| Generic Name of ONA Service | Product Name | |
|-----------------------------|-------------------------------------|-----|
| Digital Data Service 2-Wire | Qwest – Digital Data Service 2-Wire | BSA |

References:

- Qwest Corporation Technical Publication PUB 77399

Direct Current (MT3) (8051)

Direct Current (MT3) is a low-speed data private line transport service for alarm applications. It is provided over metallic facilities on a two-point or a multi-point basis. MT3 is available on an interstate basis. It may also be available on an intrastate basis (consult the appropriate Tariff Reference data to determine exact state availability).

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|------------------------------|------------|
| Direct Current (MT3) | Qwest – Direct Current (MT3) | BSA |

DSL Discrete Multitone Deluxe Light Service (8059)

Digital Subscriber Line (DSL) Discrete Multitone Deluxe Light Service utilizes Digital Subscriber Line (DSL) technology. It will be a dedicated 256 Kbps downstream and 128 Kbps to 256 Kbps upstream service.

Please refer to appropriate telephone company tariffs to determine availability and any service restrictions.

| Generic Name of ONA Service | Product Name | |
|---|---|---------|
| DSL Discrete Multitone Deluxe Light Service | Qwest – DSL Discrete Multitone Deluxe Light Service | BSA/BSE |

References: not available.

Frame Relay Service (4027,5037,8039)

This service provides fast packet transmission of customer data to and among Local Area Networks and host computers. Using statistical multiplexing, it allows customers to allocate circuit bandwidth to applications as needed and as available. Variable length frames are relayed from the source to the desired destination by means of virtual connections which are established at the time of subscription via Service Order.

This arrangement requires the use of separately purchased customer provided terminal equipment that functions as a multiplexer/bridge/router. The terminal equipment accumulates customer data and puts it into a frame relay format for transmission over the Frame Relay Network.

| Generic Name of ONA Service | Product Name | |
|-----------------------------|--|-----|
| Frame Relay Service | BS - Exchange Access Frame Relay Service | BSA |
| | NX - Frame Relay Service | BSA |
| | Qwest - Frame Relay Service | BSA |

References:

- TR-TSV-001369 Generic Requirements for Frame Relay PVC Exchange Service, Issue 1, May 1993
- TR-TSV-001370 Generic Requirements for Exchange Access Frame Relay PVC Service, Issue 1, May 1993

McCulloh Loop (8052)

McCulloh Loop (LS2) is a low-speed voice grade, private line data service for alarm applications at speeds of 0-30 baud or –150 baud. McCulloh bridging permits bridging for multi-point applications. The cable facility used must be a metallic cable pair. Up to twenty-six locations can be bridged on one circuit. LS2 is available on an interstate basis. It may also be available on an intrastate basis (consult the appropriate Tariff Reference data to determine exact state availability).

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|-----------------------------|------------|
| McCulloh Loop (LS2) | Qwest – McCulloh Loop (LS2) | BSA |

Qwest ISDL Service (8043)

Qwest ISDN Digital Subscriber Line ("Qwest IDSL") Service provides a data only, two-wire, private line service with a bi-directional data transmission capacity of 128 kbps or 144 kbps. Each Qwest IDSL must be connected to a Qwest DSL Host Service. Qwest IDSL provides the teleworker with a link/access to the end user's business local area network, enabling work-based activities, such as work-at-home capabilities and access to Internet service providers. Qwest IDSL is only available on an interstate basis.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|----------------------------|------------|
| Qwest IDSL Service | Qwest – Qwest IDSL Service | BSA |

Qwest DSL Service (8041)

Qwest DSL Service utilizes Digital Subscriber Line (DSL) technology to provide customers with both voice and high-speed data services over metallic local loop facilities. This service allows the Company to accept traffic from the customer and separate the voice from the data, sending each type of traffic to the appropriate, separate network.

Qwest DSL Service allows the end user to transmit data at peak bandwidths ranging from 256 kbps to 7 Mbps. Multiple end users' data transmissions are aggregated onto a central office hub transmitting at peak bandwidths of 1.544 Mbps, or 3 Mbps up to 45 Mbps (in 3 Mbps increments).

| Generic Name of ONA Service | Product Name | |
|-----------------------------|--------------------------------|---------|
| Qwest DSL Service | Qwest – Qwest DSL Host Service | BSA/BSE |
| | Qwest – Qwest DSL Service | CNS |

References: Technical specifications for Qwest DSL Service are delineated in Qwest Technical Specification Paper #60000-006 CAP RADSL (Netspeed).

Modem Aggregation Service (8044)

Modem Aggregation Service ("MAS") provides ESPs the ability to use Telephone Company-provided modems that are located in the Telephone Company central offices. MAS provides a dial-in number and a specified number of modems (in groups of ten), which the ESP can make available to their end users in order to provide dial-in access to the ESP's data network. End-user calls in excess of the subscribed-to number of modems will receive a subscriber busy signal. Connectivity between the modems and the customer's network is provided via standard Frame Relay Service ("FRS") or ATM Cell Relay Service ("CRS"). MAS requires the use of customer-provided equipment, located at the ESP's location, to interface with the end-user modem traffic that is being delivered over the FRS or ATM CRS to the ESP location. MAS is only available on an interstate basis.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|-----------------------------------|------------|
| Modem Aggregation Service | Qwest – Modem Aggregation Service | BSA |

Remote Access Service (4033)

Remote Access Service is a customer-controlled service that supports a dedicated, customer selected remote access server with backup dial-in capability for network management. Remote Access Service provides one-way ports for the collection, concentration, signaling and aggregation of an information service provider's (ISP's) dial-up data traffic into a hub site. This option will allow an ISP's end-user customer to call into a remote access server. Remote Access Service is available on an interstate and intrastate basis.

| Generic Name of ONA Service | Product Name | BSE or CNS |
|-----------------------------|--------------------------------------|------------|
| Remote Access Service | BS – BellSouth Remote Access Service | BSA |

Trunk Side Access Facility (4003)

This capability provides a trunk side connection from a Traffic Operator Position System (TOPS) Tandem switch to an ESP's premises. This connection will be a dedicated one way trunk group from each of the TOPS Tandem switches serving the end offices the ESP wishes to receive traffic from. This trunk group is designed to deliver the called number (UAN) and calling line ANI from the TOPS Tandem switch to the ESP. Feature Group D-like signaling will be used to communicate with the ESPs CPE.

This capability will only be available in the General Subscribers Services Tariff and only in conjunction with Uniform Access Number.

| Generic Name of ONA Service | Product Name | |
|-----------------------------|---------------------------------|-----|
| Trunk Side Access Facility | BS - Trunk Side Access Facility | BSA |

References: not available.